Haplotype-based gene?gene interaction of bone morphogenetic protein 4 and interferon regulatory factor 6 in the etiology of non-syndromic cleft lip with or without cleft palate in a Chilean population

Blanco, Rafael

Colombo, Alicia

Pardo, Rosa

Suazo, José

 Non-syndromic cleft lip with or without cleft palate (NSCL/P) is the most common craniofacial birth defect in humans, the etiology of which can be dependent on the interactions of multiple genes. We previously reported haplotype associations for polymorphic variants of interferon regulatory factor 6 (IRF6), msh homeobox 1 (MSX1), bone morphogenetic protein 4 (BMP4), and transforming growth factor beta 3 (TGFB3) in Chile. Here, we analyzed the haplotype-based gene?gene interaction for markers of these genes and NSCL/P risk in the Chilean population. We genotyped 15 single nucleoptide polymorphisms (SNPs) in 152 Chilean patients and 164 controls. Linkage disequilibrium (LD) blocks were determined using the Haploview software, and phase reconstruction was performed by the Phase program. Haplotype-based interactions were evaluated using the multifactor dimensionality reduction (MDR) method. We detected two LD blocks composed of two SNPs from BMP4 (Block 1) and three S